CST K232 Course Syllabus

Course: CST K232 – Data Communications and Networking

Hours: Lecture T 5:30 pm–8:15 pm (Room E/125) Lab T 8:16 pm-9:55 pm (Room E/125)

Instructor: Allan Anderson
Contact Methods: Blackboard Learn Messaging (preferred) *or* aanderson@trcc.commnet.edu (emergency only) for private (one-to-one) communications
Online Discussions: will be available for all learning topics – this is the primary class communication method outside of the classroom
Campus Office Hours: Tuesday (1:30 pm - 2:30 pm, 4:30 pm – 5:30 pm)
Thursday (1:30 pm - 2:30 pm)
Campus Office: Room C/106
Campus Phone: (860) 885-2392 (with voice mail)
Instructor Response Time Objectives: Mail messages - 48 hours or less weekdays, 72 hours or less weekends
Discussion posts - 24 hours or less weekdays, 48 hours or less weekends
Assignment grading – 1 week or less from due date (no assignments are graded before the due date)
Phone messages – 72 hours or less weekdays, 96 hours or less weekends

Delivery Format: on-ground and web-enhanced via Blackboard Learn. Some of the on-ground sessions will be replaced with online only sessions (Mar. 12). Please check Blackboard for latest status.

Dates: Jan. 29 – May. 14, No class on Mar. 19

Textbook: Gregory Tomsho, *Guide to Networking Essentials: Sixth Edition*, Course Technology, 2011.

Withdrawing from the course: A student who simply stops submitting work will receive the grade earned on that work, usually a failing grade. To receive a "W" grade instead, apply for a withdrawal through the registrar's office by May 13th. A "W" will be entered on the student transcript. An "N" (implicit withdrawal) may be entered for a student that stops submitting work before 60% of the class is completed.

Academic Integrity: Students are expected to do their own work in this class. Working together to better understand the material is acceptable. Submitting duplicate work is not and will adversely affect the assignment grade. Actively participating in the discussion boards both to ask and to answer questions is expected of all students. Posting of detailed instructions for "how to" responses to questions is encouraged but posting of a complete solution is not. Example violations include but are not limited to:

- Copying or sharing a file or any portion of a file from another student.
- Sharing or allowing another student to copy your files or any portion of a file.
- Duplicating or distributing copies licenses for software programs and/or services.

Students with Disabilities: If you are a student with a disability and believe you will need support services and/or accommodations for this class, please contact the Disabilities Support Services at TRCC. Please note that the instructor cannot provide accommodations based upon disability until the instructor has received an accommodation letter from the Disabilities Counselor.

Class cancellations: as a web-enhanced on-ground class with meetings on campus, any college delay or closing due to weather or other circumstances will have impact on classroom based activities. However, there may be little to no impact on other scheduled activities for this class. Your instructor will inform you of any changes to existing dates.

Course Objectives:

- To provide the student with guidelines for appropriate electronic communication techniques in a business/academic environment and the opportunity to use these techniques for class activities throughout the semester.
- To provide the student with knowledge of the fundamental concepts underlying current networking technologies.
- Specifically at the course completion students will be able to describe, explain and discuss modern networking features including but not limited to the following:

Networking Technologies	**Network Operations**
• Describe basic network terminology • Understand the importance of database design • Explain the five basic layers of standards in the TCP/ IP- OSI Hybrid Standards Architecture. • Discuss message ordering in general and in HTTP and TCP. • Discuss message syntax in general and in Ethernet frames, IP packets, TCP segments, UDP datagrams, and HTTP request and response messages. • Explain unshielded twisted- pair (UTP) wiring. • Describe the differences between serial and parallel transmission. • Describe optical fiber cabling, including relevant propagation effects and different types of optical fiber cabling and signaling. • Describe Ethernet physical layer standards and how they affect network design. • Describe the Ethernet data link layer and the Ethernet MAC layer frame. • Explain basic Ethernet data link layer switch operation. • Describe wireless LAN technologies. • Define hierarchical IP addresses, networks and subnets, border and internal routers, and masks. • Describe router operation when a packet arrives • Explain IPv4 fields and IPv6 fields. • Describe cloud computing (including Software as a Service, utility computing, and virtualization).	• Explain encoding application messages into bits. • Explain vertical communication on hosts. • Describe the threat environment, including types of attackers and types of attacks. • Explain the Plan- Protect- Respond cycle for security management. • Describe firewall protection, including stateful inspection. • Explain in detail the protection of dialogues by cryptography, including symmetric key encryption for confidentiality, electronic signatures, and cryptographic system standards. • Explain 802.11 WLAN security. • Explain 802.11 wireless LAN management. • Explain basic TCP/ IP, IP, TCP, and UDP concepts. • Explain TCP/ IP management: IP subnet planning, Network Address Translation (NAT), Multiprotocol Labor Switching (MPLS), the Domain Name System (DNS), DHCP servers, and the Simple Network Management Protocol (SNMP). • Discuss communication over the Internet via SSL/ TLS and IPsec VPNs and via IP carrier services. • Explain client/ server architectures, including file server program access and client/ server processing (including Web-enabled applications).

Lab Assignments: Weekly assignments from the end of chapter problems or from additional instructor handouts will be given. The hand-in format will be via Blackboard Learn unless otherwise noted. Class assignments should be submitted on or before the due date and time. A late assignment will lose 10% of the score for that assignment if submitted late. No assignments will be accepted after the cutoff date. Assignments will be graded on professionalism, accuracy, style and completeness. The details for each assignment, including work to be done and the due date and cutoff date, will be posted in that assignment's drop box. Students are encouraged to interact with the instructor or other students on these assignments via Blackboard Learn discussion boards but must personally perform the necessary actions to complete the assignments.

Grading and Evaluation Criteria:

20 % of the grade is based on a midterm examination
20 % of the grade is based on a final examination
25 % of the grade is based on chapter examinations
30 % of the grade is based on assigned labs
5% of the grade is based on discussion (classroom and online) participation

Final course grades will be assigned as objectively as possible, according to the following scale (a class curve may be used at the discretion of the instructor):

90 - 100%	A- to A
80 - 89%	B- to B+
70 - 79%	C- to C+
60 - 69%	D- to D+
59% and Below	F

Week	Topics	Text Assignments
1 1/29	Introduction to Computer Networks	Chapter 1
2 2/5	Network Hardware Essentials	Chapter 2
3 2/12	Network Topologies and Technologies	Chapter 3 Chapter 1 & 2 Test
4 2/19	Network Media	Chapter 4
5 2/26	Network Protocols	Chapter 5 Chapter 3 & 4 Test
6 3/5	Network Reference Models and Standards	Chapter 6
7 3/12	Network Hardware in Depth	Chapter 7 Chapter 5, 6 & 7 Test
8 3/26	Review	Mid-Term Exam
9 4/2	Network Operating System Fundamentals	Chapter 8
10 4/9	Server Management and Administration	Chapter 9 Chapter 8 & 9 Test
11 4/16	Introduction to Network Security	Chapter 10
12 4/23	Supporting a Small-Business Network	Chapter 11 Chapter 10 Test
13 4/30	Wide Area Network Essentials	Chapter 12
14 5/7	Troubleshooting and Support	Chapter 13 Chapter 11, 12 & 13 Test
15 5/14		Final Exam

Note: The foregoing course outline is subject to change as conditions warrant.